

*J Waldbury*

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### SEABROOK ON THE COTTON PLANT.

**A** MEMOIR on the Origin, Cultivation and uses of Cotton, from the earliest ages to the present time, with especial reference to the Sea-Island Cotton Plant, including the Improvements in its Cultivation, and the preparation of the Wool, &c. in Georgia and South-Carolina; read before the Agricultural Society of St. John's, Colleton, November 13th, 1843, and the State Agricultural Society of South-Carolina, December 6th, 1843, and by both Societies ordered to be published. By Whitmarsh B. Seabrook, President of the State Agricultural Society of South-Carolina, price 25 cents. For sale by  
March 1 A. E. MILLER.

 **The Subscribers to the Southern Agriculturist are reminded, that the Price of the Journal was reduced last year to all those who paid in advance; those who are still in arrears for this and former years are respectfully solicited to make their payments.**

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# THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

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Vol. IV.

FOR AUGUST, 1844.

No. 8.

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Communicated for the Southern Agriculturist.

## ON MAKING AND APPLYING MANURES.

THE increased product of land by the application of manures and stimulants, is too well known at the present day to need argument. The inquiry also, is not so much *what* is manure, as *how* can it be accumulated in any adequate proportion to the demand? With regard to the manner in which the food of plants is assimilated, &c., we are not now compelled to grope in darkness, since so much light has been diffused by the celebrated De Candolle in vegetable physiology. His light seems to dispel mysteries relating to the plants internal economy; like the light of the sun causes the dewy mists to vanish from its surface.

These observations being designed for a limited region, (the middle Districts,) it will be unnecessary to enter into a consideration of the various kinds of manures, and the particular application of each; but simply to state the proper method of accumulating those which can be obtained on the spot, with a reasonable expenditure of labor.

The method commonly adopted at present, is attended with comparatively little profit. It is not surprising that the planter should be disappointed with the result; nor is it wonderful that some should seem incredulous as to its vital importance, and deem it a subject of minor consideration. But when proper attention is paid to the collecting, preparing, and application of it, it is the *main-spring* which keeps vegetation in motion, the *hinge* on which the crop turns.

Let us take a view of the mode generally pursued of collecting manure; state the objections; and then proceed to propose a different method. By some, a lot is fenced in, on which their cows are penned at nights: this enclosure is littered by hauling into



it, oak, pine, or other leaves, at such times as the horses would otherwise be idle; or, the stubble-yard is used in place of the one above described. The urine which falls on these lots is absorbed by the earth below, and the soluble parts of the manure (which are the most valuable) becoming liquid by the admixture of rain water; part sinks into the earth and is lost; another portion runs off a rich stream into some ditch, or rivulet, and even, all of the undecomposed woody fibre of the leaves is not left; for a portion of it too, together with that from the dung itself, is washed away by heavy rains. There is loss also from evaporation by the sun, and the escape of fertilizing gases. Even that in the stables, which is the best of all, (the animals being fed on grain,) is devoured by hogs, which have free egress to pick up waste corn. And when the planter is contemplating an abundant harvest, and looking in vain for a rapid growth, occasioned by his fancied *rich* manure placed under the plants; that very *richness* which he conceives to be beneath his feet, is lost with not a trace behind, in the vast ocean, having been conducted there by some neighboring river long before.

Another plan is to have moveable cow-pens; this is better, as it obviates, in a measure, some of the objections of the former.

Cotton-seed is highly appreciated by all, perhaps a good way to dispose of it, would be to mix it with the manure that is inferior and slow in its effects.

The mode *proposed* is the following: Let stables be built to accommodate every horse, cow and sheep on the plantation; into which no hogs should be allowed to have access for the reason before stated. Until these buildings are erected, or if that be deemed too great an undertaking, as a substitute, provide pens either fixed, or moveable; if fixed, scoop them out, making with the earth removed, a little dam all around. Put a coating of litter of any kind, green vegetable matter is preferable to dry; then haul rich earth from some brook, or elsewhere, and cover over the litter, this will absorb the liquid manure. Make it a regular business to keep these pens well supplied with vegetable matter of some kind. As soon as each filling becomes decomposed, select a wet season and collect it into large heaps. It would be well to throw a thin coating of lime previous to heaping; lime might also be occasionally



scattered in the stables. All the droppings from the cattle in the exposed pens, must be picked up early in the morning before there could be much loss from evaporation by the sun, and indeed it must be picked up *wherever* it is to be found on the plantation; and all of it carefully deposited in the stables, or some convenient house. Some elderly or weakly hands should be kept at this business. The stock-minder, when driving up the cattle to be penned, might provide himself with a hoe, and whenever he finds manure dropped in fields shortly to be planted, but too much scattered to be picked up, let him draw a little earth over it.—Log-pens should be made in the woods, or pits dug there, in some convenient place, and filled up with leaves, rotton-wood, &c.; a little surface earth may be raked with the leaves, which will hasten putrefaction. In those neighborhoods where lime is to be obtained, it may be thrown into these places, also hauled on those spots where there is much unrotted vegetable matter in the soil. Little profit could be expected from liming land destitute of this, as the lime acts in a beneficial manner, chiefly by hastening the decomposition of that which would otherwise be useless, or even hurtful. Shell-lime, it is true, contains some animal matter, which would be an actual addition of nutriment to the land.

All the chimneys on the plantation must be regularly swept, which can be easily effected from the tops of the houses by the aid of a light ladder and a pliant pine sappling, the soot and ashes taken up, also the refuse charcoal which is left from that burnt on the plantation for the blacksmith's use, must be collected and scattered in the stables. Let the carcasses of hogs, sheep, &c., instead of being thrown away, be deposited under the manure, for if placed just below the surface, dogs will grabble them up, and if put deep, they will be of little or no use, and the soil perhaps injured by turning up the sterile earth in the stables; this is better than burying them in the fields. Rich earth around negro-houses, and elsewhere, should be dug up, and may be carted at any time into the fields. The stable manure must not be exposed at all, but covered up as fast as it is hauled out.

The best time for applying manure to the land, is while in a state of fermentation; for the gasses which escape during putrefaction would thereby be preserved.

Another method of manuring is the "green crop" system; cow-peas and rye have been recommended for this purpose. Of the two, cow-peas is preferable, being a leguminous plant, and consequently not an exhauster of the soil, also on account of its luxuriant foliage and vine, the vegetable matter being the grand object of the green crop system. The rye, on the contrary, is a culmiferous plant, and therefore an exhauster, its foliage too, is not abundant, except on rich land; but our object in the system is to make poor land rich. Rye however, has one advantage, it will grow during winter, so that it can be sown with little trouble, when the crop is "laid by," between the rows of a growing crop, and so does not make it necessary to let a field "be out" for the purpose. But could not some plant be discovered which would combine the advantages of both? For instance, the common mustard cultivated in gardens, the broad-leaved kind, or some other leguminous plant, having large succulent leaves, and an abundance of seed. Where the saving of land is not an object, the sweet potato seems admirably adapted for the green crop plan, as there is a return made not only in manure, but a crop also, namely, a pasture for hogs. Let the field which is intended to be cultivated the succeeding year, be planted with slips; before frost destroys the vines, list them in the alley, and throw a furrow from each side on this list; after digging a sufficient quantity of roots to plant the usual potato crop, and some time has elapsed to decompose the vines pretty well, turn in the hogs, except in wet weather, as they might then root too deep. By this method even those proverbially lazy animals will be induced to work,—to plough the field, and they will pulverize the soil in seeking for potatoes, far more effectually than it could be done with the best plough, provided a sufficient quantity of roots be made for them to search after. This makes a most excellent preparation of the land for a succeeding crop.

The rotation system is not so important where manure is used in large quantities. Nor is it so easily put in operation in a section of country where there are so few different kinds of plants cultivated, and in such disproportion as in this, to which these observations have reference. A sort of six years rotation, however, may be effected in the following manner: Supposing eight hundred

acres are under cultivation. For the sake of convenience we will call one half No. 1, the other No. 2. Let No. 1 be in cotton three years in succession. The first year, let one half of No. 2 be in corn, the other in potatoes, (roots and slips,) small grain and pasture. The second year, alternate these halves. The third year, alternate them again. Then change altogether, and let No. 2 be in cotton for three years, and alternate No. 1 with corn and potatoes, &c., as recommended above for No. 2, then begin over, and proceed as before.

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For the Southern Agriculturist.

WORM IN THE GREEN PEA.

*Mr. Editor*,—I take the liberty of writing you for information, which, I doubt not, you will willingly furnish through the pages of the *Agriculturist*, as it will, I think, be serviceable to gardeners generally, and particularly to beginners.

I have observed in Green Peas a small worm, which remains in them until they become dry, and fit for picking for seed, when it becomes a bug of black or dark color, spotted with white, and it then eats its way out, leaving a hole in the pea. So far as I have remarked, this does not materially injure the germ, but, I suppose, must do some injury to the pea. What I want to know is in what manner should peas be saved for seed, without being perforated or infested with this insect. I have unsuccessfully examined some books on gardening, as well as that portion of the back numbers of your magazine devoted to Horticulture, for something on this subject. Will you permit me to observe, that the times and manner of gathering and preserving seed for a future crop, a very important subject to the gardener, remote from cities where seed can be procured, has not received any attention in the able, useful and interesting articles on Horticulture, published in your Magazine of 1841-42, and remains, so far as your work is concerned, a desideratum.

If, without inconvenience, you can afford me the information I need, you will greatly oblige.

Very respectfully, your obedient servant,

S.

NOTE.—Will not some friend furnish the above information in time for our next number?—ED. S. A.



EXTRACTS FROM RUFFIN'S AGRICULTURAL SURVEY OF  
SOUTH-CAROLINA.

*Cursory view of the state of Agriculture, in the lower and middle parts of South-Carolina, and of the changes and improvements therein most required.*

The report of the beginning of an agricultural survey of any region, would exhibit a strange deficiency, if omitting all notice of the general characters of soil and of culture, of errors of management, and of the most important and essential requisites for improving the condition and increasing the profits of agriculture. Still, I approach the treating of such subjects, however slightly, with the reluctant diffidence which ought to accompany such admitted and great deficiency of knowledge of details, on my part, and of opportunities for ascertaining them, which must be counted on in one so recently an entire stranger to the country in question. My necessary want of opportunity for full information, while it admonishes me to limit my present remarks within narrow bounds, will, I trust, serve to excuse the meagreness of this portion of the report, and also, any misconception of facts, or errors of deduction, which may, nevertheless, appear.

The lower districts of South-Carolina present a general similarity of surface, soils, and of culture, together with many particular and local differences on each of all these points. The surface of the land is mostly level, and of no great elevation above the tide on other navigable rivers. The highland soil is generally sandy, yet, in many places, stiff; and still more often than of the latter case, is the subsoil stiff and impervious to the surplus rain water (or nearly so,) even when the soil is sandy and open. And either naturally, or from exhausting tillage, most of the cultivated lands are poor. There are numerous swamps, large or small, intersecting the uplands; and though of the highest order of fertility, and capable of being drained with certainty, and with ease compared to the value of the object, these swamps remain almost universally in the state of worthless morass, and nuisances in every respect. Besides these "inland" swamp lands, or such as are above the influence of tide, there are immense tracts of salt-tide marshes, made no use of except for grazing, and a much smaller extent of freshwater marshes. The latter class, though much less in quantity on every river than either the salt-marshes or the swamp margins above tide, furnishes nearly all the rice-lands of South-Carolina, and the annual products of that valuable crop, which are almost incredible, from the very small space which serves to yield such an amount. As more full and particular observations will be elsewhere presented in regard to rice-lands and rice culture, and as swamp lands, in general, have been under consideration, no more will be added here on these heads; and the further remarks will have reference to uplands only, and their culture.

Since indigo ceased to be the general and great market crop of South-Carolina, cotton has become the almost universal market crop, in highland, in all South-Carolina, except the range of elevated and hilly districts nearest the mountains. So little of wheat, oats or rye, is made in the lower country, that they scarcely deserve to be mentioned as parts of general culture. The soil or climate, or both, are deemed, (and correctly,) unfavorable to all these small-grain crops. Corn, with field peas and sweet potatoes, constitute the other great subjects of tillage in this region, of next importance to cotton. But of these "provision crops," nothing is raised for market, or for other than consumption on the plantations producing them. And very many of the cotton planters, (and also rice planters,) buy more or less of their provisions every year, from importations of corn from Virginia and North-Carolina; and in some cases, buy hay from New-England. The supplies of pork are still more generally bought from Kentucky and other Western States. And as the country is thus partially supplied with such provisions from abroad, it must be readily inferred, (as is the fact,) that the population of the city of Charleston depend almost entirely on foreign supplies, for corn, hay and pork. Northern and (in some cases) European hay, is even carried up to supply Augusta and Columbia, along rivers which flow through swamps covered with natural grass, so rank and luxuriant as to be almost impenetrable. Indeed, some of the greatest objections to the land and air of lower South-Carolina, (their humidity) serve to render the production of grass the more certain; and few countries possess greater natural facilities, or which are more improvable by industry, for producing in abundance, grass, hay and live-stock, and their products of meat, milk and butter, all of which are now so deplorably deficient.

It is a common opinion, that the cultivation of rice and cotton is much more profitable than that of corn and other provisions, and that those planters having good lands for the former, can better afford to raise them, and buy provisions in part, or corn, sometimes, entirely. This opinion seems to me erroneous, almost without exception. It seems next to impossible, that there can exist any where, a truly thriving agricultural class, which, as a regular system, buys, instead of raising, the necessary and most important articles of food. Such a system, pursued by the proprietors of rich rice and cotton lands, may indeed present large incomes of money for crops sold; and it may minister to encourage great luxury and expenditure. But it will be apt also to induce a pinching measure of the plain and solid comforts, and even in respect to necessary wants, and a scant provision of proper supplies of aliment to man and beast, and also to the land. A thorough reform on this head, to be produced by the sufficient diminution of each individual's rice and cotton culture, and substitution of extended corn, and other provision culture, and grass and stock

raising in general, is essential to the permanent, solid, and agricultural prosperity of the State.

Besides the error of practice, which grows out of the former state of demand and supply, principally, there are other errors of cultivation, simply, which would be faults, without regard to the balance of demand and supply. Of these the two most important have been already treated of, and need no more to be enlarged upon, viz. the heretofore general neglect of the use of the abundant calcareous manures, and the general neglect of draining inland and river swamps—which latter neglect, I will only here remark, is the more surprising, inasmuch as it is exhibited in the same region, and often in the same neighborhood, where there is the most extensive, elaborate, and perfect system of embankment, drainage and culture, exhibited in the rice culture of the tide-swamp lands.

Some other of the more important and general defects of agriculture, in the lower and middle districts especially, will now be mentioned; and first, the frequent and continual cropping of the fields, without the intervention of rest, or of meliorating crops which enable the fields to be manured by their own growth.

In maintaining the benefit and necessity of *resting* arable land from the continued bearing of exhausting crops, I do not mean that land becomes weary of producing, and requires a cessation of all such efforts, so as to have its powers recreated, as a tired and over-worked animal needs a temporary cessation of all muscular exertion. I do not know that this absurd doctrine was ever maintained by any one; and if it has been, it must have been by those who, like others who have argued against resting land, in this sense, were not practical, but mere theoretical and closet agriculturists.

Land has an unceasing tendency to produce as much vegetation as it has power, under existing circumstances, to bear; and if not cultivated, will always so produce of such weeds as there may be seeds or roots of in the soil. And what I mean and advocate as "resting," is not the cessation of production, (even if that were possible,) but the temporary intermission of the more exhausting crops, and substitution of some others less exhausting in their growth, and rendered absolutely meliorating or enriching to the land, by being suffered, either wholly or partly, to die and remain on the ground, and thus to serve as manure. All vegetable products, if removed entirely from the land producing them, must be exhausting, though in various degrees; and all, if suffered to remain here, must be more or less improving to the fertility of the soil. But there is great difference in different plants as to the comparative amounts which they draw from the land in growing; and also in what they give to it by their death and decay on the place where they grow. And it is by judiciously choosing among different kinds of plants, and using for meliorating or manuring



crops, those which will give most to the land for the least expense, that the cultivator will most improve his land and his nett profits, by what I call the giving rest to his fields from continued exhaustion.

If plants draw all their sustenance from the soil, and (as a necessary consequence) by their death and decay gave back to the land no more than they previously drew from it to sustain their growth, then no such entire process of growth and decay could increase the fertility of the soil, and it would require the return of the whole of every vegetable crop or product to the land, to keep it barely stationary in productive power, and prevent absolute diminution and finally entire destruction of fertility. But all growing plants derive more or less of their food and support (and always in large proportion, though very unequal in different plants,) from the inexhaustible supplies offered by the atmosphere. If then the crop is removed, so much of its bulk as was derived from the atmosphere has been obtained without injury to the soil—which has suffered only the usually much smaller loss of what was drawn from the earth. And if *all* the growth be given back to the land, then the improvement exceeds the previous draught by the whole amount of the much larger bulk and manuring value derived from the atmosphere. But for the abundance of this beautiful provision of nature, most soils would be exhausted by a few years of ordinary tillage; and the impoverishment so produced could never be remedied, except by an almost impossible supply of putrescent manure from foreign sources.

Much the larger part of the bulk and weight of every vegetable is probably thus derived from the atmosphere. Still, crops vary greatly in their exhausting powers, if removed from the land, and also in their manuring values and powers, if suffered to remain and decay there. As a general rule, the broad leaved plants, and especially all of the pea tribe, draw the most largely from the atmosphere, and the least in comparison from the land; and hence all these plants are the most improving as *resting* or manuring crops. On the other hand, the narrow leaved and grain-bearing plants, (as corn, wheat, rye, &c.) draw the least from the atmosphere compared to the amount they draw from the soil, and therefore are the most destructive of fertility when entirely removed, and would be the least improving, even if suffered to remain, in whole or in part, for manure.

According to the general principles here set forth, when a field is suffered to rest a year, and cover itself with a growth of natural and volunteer weeds, all of which die and decay on the ground, the clear gain to the land, of newly created productive power is just as much as the weeds drew from the atmosphere. Such a manuring crop, on land much worn and poor, will indeed be but light. But its great recommendation is that it costs nothing to

produce it, either for seed or labor; and on a very large scale, and for lands greatly exhausted, the manuring by the natural growth of weeds is the chiefest and most efficient mode of obtaining and applying vegetable manures. On such lands, artificial and far more generous manuring crops, as field peas and red clover, would not produce enough to pay for the cost of the labor and seed necessary to be given. And even if the natural growth were but small in comparison to these latter, its product is all clear gain.

But on land already in good productive condition, or after being raised to that condition, and capable of yielding good crops, it would be much more economical to subject nature to art, and to compel the land to produce the most fertilizing and also cleansing, manuring crops, such as field peas, or red clover, where the latter can be well grown; and it may be expected to grow well wherever the land has been well marled or limed. For the superior value of such crops over natural weeds, both as manure and for the purpose of cleansing the land of weeds and of insects, is much more than will compensate for the requisite and greater cost. And though such rest, under meliorating crops, is a necessary and profitable practice for all lands, it is not necessary in the same measure. For the richer that land is made by proper and sufficiently mild treatment at first, the less *time* for rest will it subsequently need, in proportion to its time under exhausting crops. For one year under good peas or clover, may serve to give to the land in good productive condition as much manure as will sustain it under three or four succeeding and more or less exhausting crops. Whereas, on the same land before being so improved, and while in its most exhausted state, two years of rest and of natural growth to one of exhausting tillage, might have been necessary for the first steps towards resuscitation.

Thus in regard to resting exhausted lands, to such extent as will not make the field too foul with perennial weeds and shrubs, it should not be considered (as it is usually) that the proprietor is losing any thing by the intermission of an annual crop. He is merely delaying the making a scanty drought from the field, and also avoiding the necessary labor for that purpose, to obtain still more of product, with less average labor, at future times. He who thus allows time and its own growth to his poor field, is lending (in the nett value of what he might obtain from an exhausting crop,) a sum at an enormous rate of interest, which he will receive with his principal, but a year or two later than the earliest payment he could have extorted.

Such is the benefit of the *rest* which I advocate, and of which *rest* there is scarcely any given on the greater number of plantations in South-Carolina, until by continued tillage the land is so reduced as to compel its being "turned out" of culture for years together, and perhaps until it throws up a second growth of pines, and is again cut down and cleared for tillage. And in this way

the most incessant and exhausting planter is compelled at last to give more years of rest to his fields, than he who gives rest the most frequently and regularly. For the long term of rest consequent upon the wearing out and turning out of the field, if divided into single years, and distributed properly among the years of production, would have served to keep the land up to its maximum of fertility for a century, or for ever.

When advocating the more general resort to rest for the fields, I have been constantly met by the question "will not manuring serve without, and in place of, rest to land?" Certainly it will, so far as giving nutriment to the soil and to its subsequent crops, and *so far as sufficient manuring shall be given*. But the latter condition is limited on ordinary plantations. All the ordinary resources for manure offered by the offal of market crops, and the leaves of extensive wood-land besides, with all the labor to be used in converting these materials to manure that any existing plantation force can bestow, would not serve to supply as much prepared putrescent manure as would be necessary to maintain unimpaired, and still more to increase, the productive power of the fields or plantation wholly under continued and exhausting crops. And though this might be done, under the different circumstances of extraordinary resources for manuring, and of extra labor devoted to manuring, still it would be cheaper to permit nature to aid the general operation and result, by adding something of her rich and inexhaustible supplies of manure from the atmosphere; or, in other words, to let the fields in part manure themselves.

This subject is closely connected with that of rotation of crops, which will be now also brought into view. In general there is even less regard paid to rotation of crops than to the resting of land. The large crops of South-Carolina, which occupy entire fields of upland, are only cotton and corn. Next in extent and importance, in the lower districts, are sweet potatoes and field peas, (always raised among the corn.) Except in the highest districts, the other crops, as oats, wheat, grasses, &c. are so few and small in extent as to scarcely deserve mentioning as parts of general culture, and as forming by their partial interposition any thing like a system of rotation. Whether intermediate rest be allowed to the land or not, the crop of cotton generally succeeds cotton, and corn succeeds corn—each being kept on land deemed the most suitable, as on the sea-islands. Or if, as practised elsewhere in some cases, one of these two crops succeeds the other on the same field, still their tillage is so much alike, that the condition of the field is not materially changed by such change and succession of crops.

Various reasons or theories have been advanced for that necessity for rotation or change of crops, which has been established by the practical experience of all well cultivated countries, and nearly by all good practical and experienced individual cultivators. And



these theories, whether fanciful and false, or however plausible, are incapable of being proved, and have by their contradictory doctrines weakened rather than sustained the general proposition of the propriety and necessity for rotation. Without asserting or opposing any of the views referred to, I will present others of more practical character, and more open to examination, which to my mind sufficiently establish the general doctrine of the necessity of rotation of crops, and also indicate the general rules which should direct the kinds of rotation to be adopted under all different conditions of agriculture.

The old and long prevalent theory was, that each particular crop requires, and more or less exhausts by its growth, its specific food in the soil; therefore, that another kind of crop can best follow, to take up also its specific and yet still remaining and abundant food. A more recent and now more prevalent theory is, that each plant rejects, and from its circulation exudes by its roots, some matters unfit for its nutriment, and which it had taken up from the soil; and that this excrementitious matter, though rejected by, and useless or injurious to, the particular crop so rejecting it, is good food for other crops or kinds of plants; and hence, by changing crops, putrescent matters which would be useless or perhaps hurtful to the previous crop, become good nutriment for other crops. Whether there is any truth in either or both of these or any other reasons heretofore given for rotation, such other reasons as I shall here offer will not be the less solid and important.

The particular condition of soil produced by the tillage or the growth of one kind of crop, is suited as a preparation for some other kind, and is as unsuited to some others. Hence, if considerations of profit direct that two certain crops shall be raised on a large scale, and the cultivation of the one serves well to prepare the land to receive the other, then it is important that they should in that order succeed each other. Thus, if corn and oats sown broad-cast, were regularly raised, and without rest, and no other large crops, there would be great advantage found in alternating them, rather than to keep each on its own field year after year. For if alternated, the clean tillage for the corn would prepare well for the oats, which has no cleansing tillage; and the cover of vegetable matter (annual weeds and natural grass,) succeeding the oats, would, as a partial manuring, be beneficial to the succeeding corn, and would not hurt its growth by producing foulness, as the necessary tillage process of the corn would destroy and keep down the growth of all annual weeds. And these reasons for such alternation would be sufficiently cogent, even if corn would grow after corn, and oats after oats (with proper preparation,) as well as if succeeding different kinds of plants. This rotation is not by any means referred to as one approved, but merely for illustration.

Again—all crops suffer from different plagues of insects, and from diseases, which, if they could be properly investigated, would

probably be found to proceed from unobserved or invisible insects. The great number or minute sizes of most of the injurious insects, make it impossible to destroy them by direct means, and thus relieve the crops suffering under their inflictions. The only effectual means is to prevent the great increase of such insects *by changing, and as completely as possible, the condition of the land from that in which they best thrive, to another altogether unsuitable to their natural habits and wants.* And such changes, so far as they can be produced by man, are best effected by such successions of crops and difference of culture and cover, as will most completely change for a time, the condition as well as the products of the soil. Some kinds of insects require, from their natural habits, not only such peculiar vegetable food as is suitable for their sustenance, but also, dry air, exposure to sun, and a naked and open soil, for them to penetrate easily for their own shelter, or to bury their eggs and raise successive progenies. Such conditions are furnished by corn, cotton, and indeed every other upland culture of the lower districts, and therefore, the insects to which they are favorable, must be kept alive from year to year, even if the crops be changed, and thrive and increase whenever the crop furnishing them suitable food is on the ground, and the more so, the longer that crop may continue to be raised year after year in succession. Other tribes of destructive insects require a close soil, and the shade and shelter and moisture of a completely covering grass or other broad-cast crop, as well as their suitable food to be furnished by some of the growing plants. And the continuance of such condition of things, without some intervening and violent change of crop and condition, will cause the propagation and continued existence of so many of such insects, that the next cultivated crop, in its young state, may be utterly destroyed by them. Thus, (for illustration) the clover manuring crop serves in Virginia to furnish the best possible condition to shelter and sustain myriads of the destructive cut worm; and if the land be ploughed in early spring, and corn planted, one or several successive plantings and young growths of the corn may be destroyed by the remaining and ravenous cut-worms, before they change to another and harmless state, (that of the chrysalis,) preparatory to becoming winged, and propagating new broods for the next season, and for which they require grass land.

Yet, by merely and completely changing the condition of the soil, these insects may be rendered comparatively harmless, or be completely gotten rid of for a particular space of time. If the clover be ploughed under early in winter, and the subverted soil exposed to the winter's cold, the eggs of the cut-worm, which were deposited in the earth, will be mostly destroyed. This is an example of greatly changed condition. But a much more complete and effectual remedy is found when the clover is ploughed under in August and September, to prepare for wheat, by which a shaded and moist condition of the soil, covered completely by a green and

broad-cast crop, is suddenly and completely changed to a naked surface of soil, open and loose for six or eight inches deep, and dried and heated by the sun. Such a condition would prevent the parent moths of the cut-worm from choosing such an unfriendly place to deposit their eggs; or if the eggs had been before deposited there, or the worms already hatched and eating, the great exposure and change of condition would effectually destroy them. And if any should still survive all this treatment, and also the additional exposure to the winter's cold, the crop of wheat still would not furnish the proper food for the worms, and they would therefore necessarily perish without doing more injury. And either because wheat does not offer proper sustenance to these and other insects destructive to corn, and sustained by green clover, or because all such insects have been destroyed by the previously sudden and complete change of condition of the soil, it is certain that the wheat following such process of burying clover under the subverted and bare soil, is more free from depredating insects, from disease, from weeds, and is of very far more vigorous and productive growth, than if following corn, or any grain crop, and having the cleanest and best possible preparation of tillage.

These facts, though foreign to the present agriculture of South-Carolina, will serve for the purpose of illustrating my general views of the benefits of rotation of crops. Were I as familiar with or experienced in the usual course of tillage in this State, as to its peculiar great crops, it is probable that many and as striking illustrations might be taken from the actual condition of things here. Something to this I shall proceed to add, though with more diffidence; because never having cultivated any one crop on the same ground in long continuation, (except cotton for a few years,) I have no personal experience thereupon, and must rely for my facts altogether on the information of others.

The *rust* of the growing cotton is one of the most general and most destructive diseases to which that crop is subject. ~~Shndry~~ <sup>Many</sup> causes are alleged for this disease, some or all of which may truly be auxiliary or even inducing causes to the main one, which (according to my general position before stated,) I take to be the depredations of myriads of very minute insects, to which the green cotton-plant furnishes their best if not their peculiar food. Other circumstances, of weather or soil, at different times, may serve to increase or check, or even prevent the depredations of these insects; but the circumstances which increase their injurious effects, could not operate, unless the insects were present. And it may be presumed that they would not be present, or be very few in number, if the preceding crop had not been cotton, but some other crop on which these insects could not live. In confirmation, I understand that cotton is rarely attacked by rust, when it does not immediately succeed cotton. The other diseases of this crop may be ascribed to other tribes of insects; and the means of prevention, either



partial or effectual, would be also a change of the continued succession of cotton, and the intervention of a condition of the soil as unlike as possible to that under cotton culture.

Corn seems to need change of soil less than any other of the great crops; and the many cases of success with which it has been raised for many years in succession on the same fertile field, have been triumphantly adduced by the opposers of rotation, as a certain and manifest proof that a change of crop is not necessary. Even if this were true, as to this particular plant, it would not affect the general question. The hardiness and vigor of the corn plant on a fine soil may enable it to withstand the depredations of some of the several tribes of insects which it breeds and nourishes; and others (as the cut-worm, so fatal in other circumstances) may be destroyed by the continued tillage and naked and open state of the soil. But though, by such or other means, land may continue to produce corn in long succession, much better than other crops so continued, still this is not even an exception to the general rule of the necessity for rotation. On the rich alluvial low grounds, subject more or less to freshes, where corn is usually the sole and annually recurring crop, it is true that heavy growths continue to be raised. But it is said, that in the most favorable seasons, there is a considerable proportion of rotten grain, even when not exposed to, or injured by water. These entirely rotten ears are often among the largest, and the product of flourishing stalks; and their unsound state may not be suspected until they are stripped of the enveloping shuck. This, and perhaps other inflictions of such crops, must be caused by the ravages of corn-bred and corn-sustaining insects. Yet this kind of land is not entirely without change of condition. The rank cover of weeds and grass which follow the last tillage of the corn, serves in some measure as a green shading and manuring crop. And even the inundations from freshes, which occur every year, however injurious in other respects, produce such great change of condition, that they may destroy or remove whole tribes of insects.

A stronger confirmation of this general position in regard to corn, I have learned on information from the proprietor of a piece of land in Virginia, with which I am personally acquainted. It is a large field of deep, mellow light soil, very rich, high and level land, and so peculiarly adapted to the growth of corn, that the proprietor thought fit to keep it under that crop every year. It was so cultivated for thirteen years in succession; peas being planted with every crop, which, with such supplies as were afforded of other manure, maintained the high fertility and product of the land. But though the quantity of corn produced was not perceptibly reduced, the rotten portion, (and rotten without any apparent cause,) continued to increase, until it reached so large a proportion of the whole product, and the evil was of so regular occurrence,

that this peculiar mode of cultivation was from necessity abandoned, and the ordinary previous plan of rotation was resumed.

But besides this important consideration, of certain tribes of destructive insects being sustained by some certain condition, and still more by the increased continued same condition of a field, and destroyed by a thorough change of that condition, such changes are better for the more complete eradication of some of the worst weeds, and still more for the better product of the cultivated crops. Ploughing or stirring the soil, however necessary to be well done while the growth of a crop needs it, is hurtful to general production, if continued year after year, without cessation. Perhaps the growth of all crops may require intervals of rest and consolidation of the soil; and it is certain that some crops, which prefer a soil of firm and close texture, (as clover and wheat,) cannot be as successfully raised upon soils kept long before under tillage and hoed crops.

And while for some purposes of tillage or product, there may be required a partial consolidation of soil, others may be best forwarded by very deep and thorough working. And two crops which are peculiarly favored by the climate of South-Carolina, and which are among the many great blessings of this region, serve admirably for these opposite purposes. These are field peas and sweet potatoes, which crops, extended as may be their culture already, and great their products, have not yet been duly appreciated in respect to all their benefits.

The pea crop, sown broad-cast, is an admirable rest or manure crop—giving shade, moisture, and consolidation to the soil—and serving, by the sudden and great change of condition from any clean tillage crop, to remove or lessen the foulness of land, both of insect and vegetable plagues. Such I have known in my own practice, to be the highly beneficial operation of this crop, even under the much less congenial climate of Virginia; and much better must it serve in South-Carolina, where not only are the climate and soil more suitable, but where the want of a crop so operating is far greater.

The length and heat of summer in this region, greatly increases the value of the pea crop. Being generally planted among the growing corn, and at a late period of its growth, the peas have enough time and sun to cover the ground well, and to mature, after the corn ceases to grow or to shade the land. This peculiar benefit of a southern climate, in regard to peas, is generally appreciated and availed of; and in this, some approach is made to an alternation of crops. Another and greater advantage, wherever wheat or oats are sown, is that the hardy black or red pea may be sown with these crops respectively, either late in autumn, or early in spring, and will often produce a good manuring green crop after the grain crop, at no more cost than the sowing of the peas. This process is, as yet, new, and so limited in extent, as to be deemed

merely an experiment, of which the result is not fully determined. I know only of Mr. Wm. K. Davis, of Fairfield, and Maj. J. Littlejohn, of Union, who have, for several years, made the experiment, and so far successfully. And their object was not to use the secondary crop of peas, for what I deem its main value, that of being given to the field as manure.

These hardy and thick-skinned peas, if left on or covered in the ground, will not rot from all the cold and wet weather of winter. The danger to be feared and guarded against, is from the occurrence of a warm spell, which would induce sprouting, and consequently, the killing of the peas by succeeding cold weather. The peas grow so slowly at first, as not to be in the way of the covering grain crop; but start rapidly as soon as the latter has been removed. On September 1st, I saw a field of Maj. Littlejohn's, which had borne wheat this year, and was then under a second growth of black peas, too thin indeed, generally, but of well advanced growth, and which promised a valuable manuring cover to the land. No seed had been sown for this crop. It sprung entirely from the peas grown there the preceding year among corn, and which, though the vines were pulled up and the crop removed as usual, from the shelled and wasted seed left on the ground, this crop was produced the succeeding year.

In the sweet-potato, this country possesses a root more valuable in product, than that of any root crop of more northern climates, highly and deservedly as root crops are there prized. And potato culture, so far as it extends, ought to make an important and peculiarly valuable part of a general scheme of rotation, because of the peculiar growth of the crop, and the peculiar condition in which it puts the land. The sweet-potato, though reported to draw heavily upon the soil, as do all root crops, yet, as one of the broad-leaved plants, it must draw largely from the atmosphere also; and as it can be so cheaply planted, (by slips) and easily tilled, perhaps this plant might even be profitably used as a manuring crop. But, even when the roots are removed for use, and (as usual) hogs turned in to eat the remnants, the deep growth of, and digging for the roots, also the thorough and deep rooting by the hogs, produce a condition of deep and perfect tillage, which is rarely attained in any other case, and might be most beneficially made the preparation for some other crop requiring very deep ploughing and tilth to prepare for its growth.

Perennial, or other permanent grasses, of which, doubtless, there may be found some peculiarly suited to this warm climate, would still more serve to give the great benefits of changed condition to the fields, independent of the much needed benefits of grass husbandry for the feeding of live-stock, and giving rest and manure to the land. The grasses whose value has been fully established by long experience in more northern countries, should be tried—not because



they are from the north, (which in itself is a strong objection,) but merely because their good qualities are known, and possibly some of such grasses may as well suit a more southern clime. And such, I trust, is red clover, the best of all green and manuring crops. For although this was long held to belong to the north only, I have fully experienced that its locality and the perfection of its growth are fixed much more by peculiarity of soil, than by latitude. Not more than twenty years ago, it was as general a belief in lower Virginia, as now in South Carolina, that there the soil was too scanty and the sun too hot to raise red clover. But since marling and liming have made many of these soils calcareous, it is found that neither the sandy soil nor hot and dry climate forbid the raising excellent and profitable crops of clover. And so hereafter it will be found in South-Carolina.

It may be deemed a strange omission here, that I do not recommend any particular scheme of rotation. It could be only from the presumption growing out of ignorance, had I done so. Rotations ought to vary in the length of the course, and in the succession of crops, according to circumstances; and it is sufficiently difficult for a person fully experienced in the existing agriculture and general condition of any one region, to adopt there for himself and his peculiar circumstances, the most beneficial and profitable plan of rotation. And without such advantages of knowledge and experience in South-Carolina, all that I can presume to do is to indicate the general objects and proper principles of rotations of crops. Every planter who may be convinced of the advantages of alternate husbandry, if keeping in view these objects and principles, may best select such plan of rotation as will suit his own circumstances.

The small use made of the plough, (indeed its total disuse in many cases,) and its substitution by the hoe and hand-labor, is, to a stranger, the most remarkable and novel feature of the agriculture of the lower districts. I will not occupy here the time and space which would be required to answer each of the many reasons which are urged by different planters in defence of this practice. If, however, these reasons or any of them be valid, then all the remainder of the world, and in all ages, have been mistaken in universally supposing the use of the plough to be one of the greatest and most labor-saving improvements of process, in tillage.—And without going farther for examples of approving opinion and practice in this respect, it is enough to refer to the neighborhood middle and upper districts of South-Carolina, where the plough is used as extensively and as profitably, to save tillage labor, as in any other country.

But while denying the force of any of the many alledged reasons given for preferring hand-hoeing to ploughing, where the latter might be substituted, it is sufficiently obvious why hand labor with the hoe should originally have been cheaper and preferable to horse labor and the plough, in this and in other newly settled countries;

and the continuation of the former, so long after the original condition of things has ceased, is only to be ascribed to the difficulty of changing old habits and yielding old prejudices.

In the upper hilly districts and elsewhere, there might be urged one strong (perhaps the strongest) objection to ploughing, which does not exist any where in the level surface of the lower districts; that is, the inducing more of the destructive washing away of the soil on steep and broken lands. Yet, notwithstanding this very serious attendant evil, no one there would think of seeking to lessen it by abandoning the use of the plough.

The manuring operations of the planters of South-Carolina have justly commanded by admiration for their extent, and for the great amount of labor regularly and generally applied to this important object; and which amount of labor is the more necessary, because of there being almost no other means of improvement used. The general system of culture gives no considerable article of offal of crops, either as food or litter for cattle. The corn-stalks are left standing in the field, and are there picked over by the cattle; which practice (under the generally existing circumstances) is better than would be taking the double trouble of bringing the stalks to the cattle pen for food and litter, and then carrying them out again as manure. There is almost no straw, except on rice plantations, and where it is mostly thrown away. Cotton seed furnishes a very abundant and rich manure; but this is applied alone, without passing through the cattle pen. The great source and material for litter is presented in the leaves raked up in the wood-lands of the plantations. And as there is attached to most plantations (other than in the sea-islands) a large extent of wood land, the supply of this material is limited only by the labor required for its collection. The quantity made and applied annually is so great, that it is not uncommon for more than half the cotton (which occupies the larger space of culture of most plantations) to be manured every year, from this material almost entirely.

But then this vegetable material, however valuable for its large supply, is very poor in quality compared to its bulk; and it is applied under the drill, or "listed in," so as to make a small quantity go as far as possible for immediate effect, and which, therefore, is the most transient effect. This mode of application is certainly preferable for the kind of manure and its object; and still more if on naturally poor land, where all putrescent manures would last but a very short time. On Edisto Island, and other sea-islands, where there is the most marked attention paid to manuring, and the greatest quantities of manure are applied, wood-land is generally scarce, and of course, wood's litter. There the grass of salt marshes supplies the deficiency of litter, and the marsh-mud is also applied to every acre of cotton and for every cotton crop, besides a slight dressing of animal manure given by running summer cow-

pens over the same land. The labor given to these different manuring operations is great, and perhaps in some cases the cost is carried beyond the profit.

Where there is so little food for cattle furnished in the offal of crops, and none by making hay, it follows necessarily that there can be no general feeding of cattle in winter, and of course no confining them generally to the pens then to obtain their manure. In many places the cane and other wild grasses of the swamp are so abundant through winter, that cattle fare well without any other food; and of course, under such circumstances, it is the best economy for all cattle not required to furnish milk or labor, to be suffered to run at large. But even where this resource has failed, there is still no regular winter feeding in the low country; and the condition of cattle is miserable, and their products almost nothing, except in manure, for which object alone large stocks are kept. As, under the circumstances stated, not much manure can be made from cattle in winter, (the main time for the manure harvest on grain farms, and where cattle are winter-fed,) the deficiency is supplied by penning through all the summer and grass season, in standing pens and on woods' litter. This plan (of penning in summer, and especially on litter, often wet and even fermenting,) however it may add to the quantity and quality of the manure, is very injurious to the cattle; and perhaps more so than is compensated in the additional richness they thus give to the vegetable manure. Hence it is not uncommon for a stock of 100 head of cattle to yield to the proprietor in labor, milk, and butter, less than would four oxen and four milch cows well fed and provided for.

The great objection to the usual plan of manuring with woods' litter, where used in much greater quantity than required for comfortable littering of the animals necessarily confined, is the double handling and double hauling of so bulky and so poor a material. While applauding the greatest available extent of collecting leaves, I would prefer applying them at the least cost of labor; and that would be, so far as the system of culture permitted, by bringing them directly from the woods to the field during the year preceding its cultivation. This could not be done in the usual mode of unceasing tillage. But it might be well done on land during a year of rest, even if no other than the natural growth of weeds were to have the first benefit—and still more if the leaves were laid over broad-cast manure crops of field peas, immediately after harrowing in the seed. This opinion, as applied to this particular crop, is altogether theoretical, and in advance of practice and experience. But I have had long and satisfactory experience of the superior benefit of thus applying leaves and litter just drawn from the woods, as well as all more rich or more rotten putrescent manures, as top dressing, to clover. When thus used, rather than for tillage crops, there is much less trouble in making the application at first, and also subsequently. The effect is more immediate



of all the manure that is enough rotted and soluble to act at once, or as fast as it attains that condition; for the first rain carries down into the soil all the soluble parts, and the roots of the broad-cast crop, being every where dispersed, immediately take up the manure, and convert it to an increase of crop. When the coarsest unrotted compost has been so applied, within a few days after such an application, in the spring, if a rain has intervened, the first effect of the manure may be plainly seen on the young growth. The more rapid growth and increased shade of the clover, the more it shelters and keeps moist the coarse manure, hastens its rotting, and protects it from waste. All that was unrotted, and would have otherwise remained hard and inert, is thus speedily made fit for use, and then immediately becomes the nourishment of the growing plants. Thus, in a few months, without any labor or risk after the application, the woods' litter or putrescent manure is mostly converted to a greatly increased stock of manure in a growing crop, which is then given to the land, as manure, with all that remains unconsumed of the applied manure, to sustain the next year's and succeeding exhausting crops. So far as woods' litter and other manure (especially if coarse and unrotted) can be thus used as top-dressing to manuring crops, the materials used go farther and produce most benefit. And if the materials be so abundant that their application was previously limited only by the labor required to collect and prepare them in the usual mode, then the extent of application can be greatly increased, because less labor will serve for much larger operations. And though I know of this operation on a large scale only in regard to clover, there cannot be much ground for doubt as to like benefit being the result of like applications to any other green or manuring crop, sown broad-cast, or not requiring tillage, or even to natural grass and weeds serving as a rest and manuring crop.

Another excellent application of woods' litter (and more especially of such as is mostly or wholly of pine leaves,) is on wheat or oats, to be spread over the surface immediately after the seed has been harrowed in or covered. Of course, care should be taken that the dressing is not too thick to prevent the wheat coming up well. The cover protects the wheat from the severe cold of winter, and the more injurious sudden changes of temperature, as well as serving as a slight manuring to the crop, and still better to the subsequent growth. This mode of top-dressing with woods' litter, though I have experienced on a small scale its good effects, cannot be adopted where wheat is a large culture, and its seeding alone requires all the labor that the farm can furnish for the limited seed time. But where only small crops of wheat or oats are raised, as in the middle range of districts, this practice might be adopted generally and profitably, unless it be attended with inconveniences not yet made known by experience.

## AN ADDRESS ON THE AGRICULTURE AND HUSBANDRY OF THE SOUTH.

*Delivered by General JAMES HAMILTON, on the Fourth of July, 1844, before the Agricultural Society of Fort Mitchell, Russell County, Alabama, on the Inauguration of the Society, and published at its request.*

Fellow-Citizens:

WE have assembled to-day, for the purpose of forming one of those associations, which have been found by universal experience, in diffusing a knowledge of a scientific culture of the soil, to promote those kind relations of human life, upon which so much of our happiness in this world depends. Large associations of individuals, either in politics, or even on the consecrated topic of religion, often lead to conflicts of opinion destructive of that harmony, which is so essential to the full enjoyment of our intercourse with others.—But it is a beautiful and benign truth, that cultivating the earth leads to no sects and schism—that differences of opinion in this pursuit, do not excite the passions of our nature, but only invoke the powers of our reasoning, that through observation and experiment, as applied to well ascertained facts, we may be lead to the establishment of truths of the highest practical utility.

It is thus, that agriculture is in kindred alliance with all the amiable tendencies of the human mind. The passions of man, in the peaceful tillage of the soil, seem to partake of “the softness of that vernal season,” when we place in the bounteous bosom of the earth, the hopes of the year, and look with grateful expectation on an autumn, which is to reward our labors.

Agriculture, may therefore, be said to be, the kind mother of us all, the source which sustains life, supports nations and forms the *pabulum* of the commerce of the whole world.

It is not suprising, that in the exuberant poetry of ancient Mythology it was deified, and that Ceres was crowned with the most fragrant and verdant garlands which grew in her own gardens, as the most propitious and blessed among heathen deities. The old Romans, who were certainly not only the greatest warriors, but the most profound politicians of their time, paid such honors to this art, that they deemed the highest praise they could accord an individual, was to say “that he had cultivated well his spot of ground.” It is a science too, which has not been stationary for a single instant, since the moment when our first parents were ejected from that garden, “whose rich trees wept odorous gum and balm,” ejected with the penalty that they should earn their bread by the sweat of their brow, through which by the clemency of God, man has created for himself by his own industry, a second paradise. In many of the sciences and arts, we have made no progress since the period of a

remote antiquity. In poetry, Homer stands yet as an unapproachable model, whilst the statuary of Phidias is without a rival. But agriculture is daily adding to the garner of knowledge, as well as to her granaries of production. It is the most essentially accumulative of all science. And if the vagueness of historical record permitted it, it certainly would be one of the most curious and instructive of summaries, to trace this art from its origin, to its present career of gigantic and irrepressible improvement.

It is one of its honors, that the greatest names ancient and modern, have paid homage to the august functions it performs for man. All other sciences seem to have a narrow crucible for experiment, but agriculture has for its sphere the universe, for its lamp the sun of heaven, for its matrix the earth, and the clouds for its fertilizing curtains, and exhaustless aqueduct. It is, too, one of those occupations which furnish a retreat for the human mind, when we have found how barren and hard the other pursuits of the world have been in producing any thing else, but wasting and corroding cares.

In the sleepless ambition of Cromwell, in his intense and consuming occupations, how instructive it is to recognise in a mind instinct with usefulness, his convictions, that the waste and destruction which the civil wars of England had brought on his country, could only be repaired by the bland-influence and healing cultivation of her soil, by building up again her homesteads and villas, by restoring her cornfields, vineyards and herds. In the labor of which, he furnished in spite of the cares of State, his own instructive example. Perhaps one of the most interesting anecdotes related of the great Protector, is the fact, that he selected Hartlib, the friend of Milton, to whom the immortal Bard has dedicated one of his tractates, on the rights of the human conscience, as the object of his bounty in consequence of the services which he had rendered to the agriculture of England. A man who with the blind Poet was too stern a Republican to truckle to his patron, but whom Cromwell, nevertheless, had the magnanimity to honor and reward.

Agriculture did not, however, reach the era at which it received its great and quickening impulse, until chemistry as an experimental science, rose as its handmaid out of the mysticism of alchemy.—By this science we have learnt “the mode of investigating the composition, and studying the source from which plants derive their nourishment.” By the chemical composition of manures, we have learned the true philosophy of their application, and have given to what was before vague and often unsatisfactory experiment, scientific precision and systematic arrangement.

This great epoch of improvement received its acquisition at a comparatively recent period, from Sir Humphrey Davy's great work on Agricultural Chemistry, since which the science has been steadily progressing, and it may well be said, by its agency we have realised the aspirations of a benevolent patriotism, by raising two blades of wheat where but one formerly grew.



I will now, fellow-citizens, proceed to disclose what ought to constitute the main object of our association ; which is in one word the great primary and cardinal object of scientific agriculture, viz : To realise the greatest product, with the smallest expenditure of labor, capital and soil. To this attainment all the improvements of modern agriculture are directed ; they have this scope and end and nothing else.

In elucidating the progress of this problem in our hands, we ought, as forming indeed the objects of our Society, to notice the best and most economical modes of preparing the soil for the reception of the seed, which necessarily in the first instance, involves the consideration of the best models of that great and first implement of agriculture, the plough. The best mode of rearing and sustaining the animal, without which the plough is an inert machine. The seeds best adapted to our soil and climate, the manures most propitiously calculated to promote their germination, growth and maturity. After a bountiful Providence has thrown the offerings of the harvest into our laps, we ought to devise the most judicious means of preparing those we intend for market, and the most provident expedients of saving those we intend for our own consumption.

The value of those staples we prepare for market, cannot well be over estimated ; but every good planter must look to his granary and meat house, as the source for making them, and as indeed, the source of the solid strength of his plantation. With this view, we should ascertain the best modes of cultivating corn, potatoes and peas, and all the other leguminous and succulent plants ; to gather the best means of rearing the most improved stocks, both of cattle, hogs and sheep. Nor ought we to be unmindful of the policy of raising our own horses and mules—a subject too much neglected by the Southern planter. But to accomplish all these objects, we ought to bear in mind, that the great source of production is the earth ; that in order to keep her in a kind temper for yielding, we must pay her tribute without stint. That no system of agriculture is worth the expense of its maintainance, that does not look to a constant and unremitting renovation of the soil, through the judicious application of the most fertilizing manures. In this career of labor most of us are engaged, and it is for the purpose of discussing and recording the knowledge we may acquire in this our especial avocation, that this Society has been formed.

You will now allow me to give you a brief summary of the ends we propose to accomplish. We purpose, that every interesting fact which may come to the experience of any member, either as illustrating an improved cultivation, or augmented product of any one of our staples, either for commerce or our own consumption, shall be a subject of record and of contemporaneous discussion in our Society. That at our quarterly meetings, these facts shall come up for deliberation, and that discoveries which are made elsewhere,

and have become the subjects of publication, shall likewise be submitted for consideration and record. That for the purpose of exciting a spirit of emulation among our planters, we propose establishing a series of premiums for the raising of the best crops of all our staple productions, and rearing the best stocks of all our domestic animals. This, together with committees of visitation, for the purpose of inspecting the crops within the precincts of our Association, and of reporting on their probable product and mode of cultivation, would seem to constitute the principal objects which have brought us together.

I shall however, be wrong not to notice another purpose. To bring us as neighbors and friends in social intercourse. To incite and enlarge those sympathies which belong to the best affections of the human heart. And at the shrine of the good Ceres, to find in her blessed beneficence and tranquil pleasures, an altar where the irritations either of politics or polemics, may at least find a temporary truce. Having disposed of these preliminary considerations, I now propose to say something of the agriculture and husbandry of the South.

I shall begin first with that staple, which is the great article of our commerce, and as it has not unaptly been called the pacificator of the world, because its necessity to the industry of the greatest belligerent in the world, holds her in check. Within the span of human life, a plant which was cultivated as an object of horticultural curiosity, has become the first of our products, and which in its aggregate and average yield, has reached in our country alone, the enormous amount of two millions five hundred bales per annum.—By the extraordinary skill which has attended its cultivation, the production of this staple has probably exceeded the point of its consumption, and if we are not able in the recently opened markets of China, to find vent for the surplus, prices may probably for a time, fall below even the cost of production. It would seem, therefore, where there is an excess of production, that the policy is questionable, to treat of the best mode of augmenting the production of an already over gathered product. But the axiom in political economy, to produce as much and sell as high as you can, applies as well to this article as any other, and although its production has greatly increased, yet a steady augmentation of the population of the world and a consequent highly enlarged consumption of this staple, will, before long restore the equilibrium between the demand and the supply. I think it may be assumed as a postulate, that about as much cotton is produced now as can be gathered, but I am equally certain by the improved mode of manured and checked culture, that half the land now in cultivation will give the same return. In other words, I believe five hundred acres of cotton in the new mode of its cultivation, will produce as much as a thousand in the old. In order to embark in this recently recommended culture, it is admitted, that a large and accumulating stock of manure is necessary.

It is however to be remembered, the seed of one crop will nearly manure one half of the succeeding one, by resorting to the check culture, and by carefully littering and stabling our working animals and stock the whole year round, an amount of compost to manure the other half may be made. But after all, the great magazine for restoration and improvement of our soils, is at our own doors, through the region of country we occupy. Marl constitutes a never failing source of renovation. It renders porous soils more compact, and clay soils more friable, and is the most powerful agent yet discovered for decomposing vegetable matter, and converting it at once into manure. It is in this last particular it performs its most beneficial office. It has been found equally as fertilizing to cotton as to any of the cereal or root crops. Virginia has been renovated by its use. It has checked emigration in that State, doubled the product of the counties in which it has been used, and very nearly increased the price of farms in the same ratio. Yet the marl in Virginia does not average more than 60 per cent. of the carbonate of lime, its constituent element of usefulness, whilst the marl of Georgia and Alabama reaches nearly 90 per cent.—a vast difference in our favor. Let every farmer commence at once a search for that valuable mine on his farm. It is easily detected by its brown and greenish incrustation, in which are imbedded small fragments of sea-shells. Mr. Ruffin, to whom the South owes a large debt of gratitude for his researches, on this subject says, that "when any earth or stone is suspected to be marl, if it be calcareous, the easy and ready mode to test it, is to apply a few drops of muriatic acid or any other strong acid. Twenty-five cents worth of muriatic acid would be enough to test thus, one thousand specimens. If no other acid be at hand, strong vinegar will serve, provided, if the specimen be very hard, it be first pounded or crushed. If the earth in question is calcareous, (as marl or limestone,) such application of acid will produce (by the disengagement of carbonic acid gas,) an immediate and violent effervescence, which it will be impossible to mistake. A mistake however, is frequently made by new experimenters in this manner. If the acid (as indeed would water,) be poured on dry clay, or earth not calcareous, the atmospheric air enclosed in the pores or crevices, will give place to the liquid, and escapes in air bubbles, which may be mistaken for a very slight disengagement of carbonic acid gas. The moistening of the earth with water, before touching with acid, will guard against this slight source of error. This testing by acid, decides as to what is calcareous or not, but of course does not distinguish between natural and artificial formations; and for manure, the latter, so far as they may hold out, would be just as serviceable as the former, provided they are as rich. Therefore, when the character of any earth has been tested, and found to be calcareous, the next examination needed is, (not a chemical analysis of a specimen of the first spadeful, but) to ascertain whether the quantity or extent be con-



siderable, by digging and removing the earth and applying it as manure. Nearly all the artificial deposits (indigo vats, transported limestone, or other kind,) which I have been called to decide on, might have been dug through and exhausted in half an hour, and the most extensive of them would not have supplied a single cart for three days. Therefore, in all such cases of doubt, after ascertaining the earth to be calcareous, let the proprietor put a grubbing hoe and spade to work, and a cart if need be. The longer the supply may last, so much the more to his profit, and he will not fail to learn, either in a few minutes or a few days, whether the deposit be natural and abundant, or artificial and of course very limited in extent."

In many parts of South-Carolina where marl has been applied, the cotton crops have been nearly if not entirely duplicated, and although our soils are less worn than her's, it behoves us at once to commence a resort to this great mine of agricultural wealth. It ought at once to constitute an object of our Society, to obtain detailed instructions for its use and application. It is not, however, alone by the use of manures, that our cotton crops are to be increased—the great elements of solar light and heat are no less essential. Hence our cotton rows ought invariably to run south and north, that not only the least amount of shade should be cast on the plant, but that as our winds prevail in the summer months, the highest amount of atmospherical nourishment may be given to the plant. The necessity of this will be manifest, when it is recollected how much atmospherical nutrition the cotton derives from absorbents of its redundant foliage. I believe moreover, after the full moon in July, the perpendicular stem of all cotton over four feet and a half high, should be topped, and the two or three of the long lateral branches on the full moon in August. I am satisfied that in rank and wet seasons, we should make at least one third more to the acre by adopting this process. We have the authority of Liebig for this phenomenon in the physiology of plants. In his great work on organic chemistry, he says, "the amount of food which young plants can take from the atmosphere in the form of carbonic acid and ammonia, is limited; they cannot assimilate more than the air contains. Now, if the quantity of their stems, leaves and branches has been increased by the excess of food yielded by the soil at the commencement of their development, they will require for the completion of their growth, and for the formation of their blossoms and fruits, more nourishment from the air than it can afford, and consequently they will not reach maturity. In many cases, the nourishment afforded by the air under these circumstances, suffices only to complete the formation of the leaves and branches. The same result then ensues as when ornamental plants are transplanted from the pots in which they have grown, to larger ones, in which their roots are permitted to increase and multiply. All their nourishment is employed for the increase of their roots

and leaves; they spring, as it is said, into an herb or weed, but do not blossom. When on the contrary, we take away part of the branches, and of course their leaves with them, we thus prevent the development of new branches, an excess of nutriment is artificially procured for the trees, and is employed by them in the increase of the blossoms and enlargement of the fruit. It is to effect this purpose that vines are pruned."

In an alternation of crops we ought likewise to look, with the occasional fallowing of our lands, as a source for their steady improvement. By a system of fallow, the lands for a thousand years, as in the vicinity of Naples, have been kept in constant heart, whilst an annual change of plants from those with, and those without surface roots on the same land, has been found to produce no deterioration in the fertility of the soil, after years of uninterrupted culture.

The same high authority to which I have just referred, (Professor Liebig) says: "It has long since been found by experience, that the growth of annual plants is rendered imperfect, and their crops of fruit of herbs less abundant, by cultivating them in successive years on the same soil, and that in spite of the loss of time, a greater quantity of grain is obtained when a field is allowed to lie uncultivated for a year. During this interval of rest, the soil in a great measure, regains its original fertility. On the other hand it has been remarked, that a field which has become unfitted for a certain kind of plant, was not on that account unsuited for another, and upon this observation a system of agriculture has been gradually founded, the principle object of which is to obtain the greatest possible produce with the least expense of manure.

"Now it was deduced from all the foregoing facts, that plants require for their growth, different constituents of soil, and it was very soon perceived, that an alternation of the plants cultivated, maintained the fertility of a soil quite as well as leaving it at rest or fallow. It was evident, that all plants must give back to the soil in which they grow, different proportions of certain substances, which are capable of being used as food by a succeeding generation. But agriculture has hitherto never sought aid from chemical principles, based on the knowledge of those substances which plants extract from the soil on which they grow, and of those restored to the soil by means of manure. The discovery of such principles will be the task of a future generation, for what can be expected from the present, which recoils with seeming distrust and aversion from all the means of assistance offered it by chemistry, and which does not understand the art of making a rational application of chemical discoveries. A future generation, however, will derive incalculable advantage from these means of help."

By this improved mode of culture, through the instrumentality of a system of manuring, I believe, we may make one acre produce as much as two by the old denuded process, by which we take every thing from the soil and return nothing to it. The consequences to

our operatives from this mode of cultivation, by which we give to one acre the productive energies of two, are of inestimable consideration. First, one half of the horses and mules which we now use to go over an immense space of imperfectly cultivated soil, may be dispensed with, or used for the garden cultivation of a diminished number of acres. Secondly, to our slaves how greatly will the burthen be lightened, by tilling one half of the quantity of land, yet in the end having a harvest equally or perhaps even more abundant to gather? To say nothing of the increased facility of the harvest itself, by pulling two thousand pounds of seed cotton on one acre, instead of one.

At the Bend, I have this year planted in the check, twelve hundred acres of cotton, six hundred I have manured, the other six are planted in the first rise of the swamp, in a rich alluvium of untouched fertility requiring at present no manure. Two hundred acres of the former, on the second level of the swamp, are on a stiff clay flat. The cotton was planted in this field on the 1st of May. It did not receive a drop of rain until the first week in June. The consequence has been, that I have encountered incredible difficulty in obtaining a stand; some of the land was re-planted five times, and none less than three. It was not until the 10th of June, by unremitted efforts, I at last succeeded in setting the crop in this field. I advert to this miscarriage for the purpose of indicating its remedy, to-wit:—of giving a deep winter close furrow ploughing, to all the clay lands you design for the check culture, and harrowing them early in the spring before you check off, after they have been rendered friable by the winter rains and frost, and another spring ploughing. I believe I might have thrown up and abandoned these two hundred acres, and still that at the first level of the Bend, I will make more cotton, from present appearances, than my whole force can gather between the 15th of August and 15th of January, from manuring and adopting the check, and discarding the drill culture. On my first level, I have checked five feet by four, and on the second level, four feet square. I believe, however, five feet by three in the most fertile soils, and four by three in those of less richness, will be the right distance.

My corn on Cantey's fraction, which I think the richest piece of high river bottom I have seen this side of the Brasos and Colorado, I have planted in squares of three feet, and thinned to a single stalk. It is the best eared corn on my place, and will average, if no disaster occurs, nearly two ears to the stalk.

In noticing the check culture, I should be singularly unmindful of the claims of an individual who has most successfully directed the public attention to it, if I did not pay a willing tribute to the intelligence and ability with which he has illustrated the philosophy on which it rests. You will understand, gentlemen, that I can allude to no one but Dr. Cloud, of Macon county, who by his careful analysis and induction of facts, has done much I believe to dimin-



ish the labor and augment the product of the cotton crop of the United States. That his theory rests on the true philosophy of the plant, I entertain as little doubt, as I do that its introduction will mark a new era in the culture of our beneficent staple. You will permit me to remark, that this system of manuring and planting in the check, take off half the tax on our lands, by allowing us to fallow half, or enables us to double our product in provisions and stock, if desirable. Indeed, a system of steady and efficient manuring, combined with an alternation of our crops, and of fallowing the most exhausted of our soils, constitute the best recipe for renovating an old country and preventing a new one from growing old.

We ought to combine with this system of restoration and reproduction in our soils, a most careful selection of the most approved species of stock. It seems yet to be a point undecided, whether the Holderness, Ayrshire, Herefordshire, Dürham, or Devonshire breeds, are the best adapted to our climate, or whether any one of these stocks engrafted on the common cattle of our country would not be preferable to the unmixed foreign breed. Certainly a cross of the Berkshire or Woburn with our common hog, is more thrifty than the full blooded breed of either. The cattle of Alabama are so generally inferior, that we propose premiums not only for the best specimens of horned cattle, but likewise for the best exhibition of any other domestic animal connected with the purposes of agriculture. Indeed, the economical husbandry of weaving our own negro cloth, of raising our own mules, cannot too soon claim our attention. On all these essential points of farming, I have made a beginning at the Bend, by the introduction of the best imported stocks; I have four different species of foreign cotton on which I am conducting a series of experiments; and a patch of sugar cane, the sirup of which I mean to get by a new process of manufacture. The result of these experiments I desire to diffuse throughout our country, and indeed throughout the country, as far as their utility can extend.

Fellow-citizens, we occupy a section of country worthy of the application of those great principles of agricultural renovation, to which I have referred. For strange as it may appear, some parts of Alabama already, young as she is, begin to put on the wrinkles and furrows of a premature old age, brought on her by the penurious barbarity of a soil-killing culture. The line of latitude, which cuts the very centre of the cotton cultivation of the new world, passes near the building in which we are now assembled. This beautiful plant bathes its blossoms in the beams of a sun, which nowhere shines with a more genial warmth, for its growth, development and maturity, than with us. Our soil is blessed with an Egyptian fecundity, diffused by that noble river, which marches by our doors in silent majesty to the ocean; giving us a broad valley surpassed by none, if equalled by any, east of "the great Father of the Western waters." With all its affluence of soil, we must recol-

lect, that our mother earth is as exacting as she is generous; she gives but requires us to pay. If we fail in our tributes to her, she will fail in her donations to us. No good planter should rest quietly in his bed, except under the conviction that the spot which God has given him to till, is growing better, rather than becoming worse in his hands. This is a debt he owes to posterity, of much higher obligation than that which, by a Spanish aphorism, compels us to plant at least one tree before we die.

If we should be destined to see our great staple break down from over production, or from any fanatic discriminations Great-Britain may make in favor of what she calls, with abundant cant, free cotton, (as if she made one pound of cotton or sugar in India, but by a compulsory labor, in effect far more grievous than our own,) we still have left to us vast resources copious and untried.

I believe without indulging in visionary projects in looking out for new staples, the experiments which have been made in Mississippi with hemp, justify the belief that we can equal the production of Kentucky in this great article of consumption; whilst the recent success of Professor Mapes, in extracting the finest quality of sugar from molasses, warrants likewise the belief, that a large profit may be realised at last by us, in the culture of the sugar cane, by the instrumentality of the evaporator which that gentleman has so successfully applied to the separation and chrystalization of the saccharine matter in molasses. We can make on our best lands with the same facility that we can corn, five hundred gallons of the richest sirup to the acre, which would be found to hold not less than three pounds of sugar to the gallon in solution; far richer and much more easy of granulation than the molasses. I think I hazard nothing in saying, that if cotton should fall to five cents, that under the important discovery of this practical chemist, in five years all the alluvial lands on this river, will be dedicated to the cultivation of the cane.

Madder is beginning likewise to attract the attention of the most intelligent of our agriculturists, as a staple adapted to our soil and climate, and susceptible of a moneyed return vastly transcending the culture of cotton.

We have every thing to encourage us in our career. May the humble institution we have this day planted, tend to develop the resources of this section of our country, comparatively, even to ourselves so little known, by enlarging the sphere of our knowledge, exciting a spirit of generous emulation, and by its giving to one of the most useful arts God has given to man, something of that precision which belongs to it as a science, which from its certainty and truth can hardly be called an experimental one.

Let us hope too, to have the countenance of our wives and daughters, not alone in the sober prose of the dairy, where so much substantial good may be done, but if they will, in that which belongs to the poetry of agriculture—the flower garden and the shrubbery—

those beautiful ornaments of the homestead and the lawn, which afford such sunny pictures of the living benevolence of God, that he should for the gratification of the external senses of man, have given to the violet a hue, and to the laurel a gracefulness of conformation, which neither the pencil of Claude Lorraine, nor the chisel of Canova, can rival, although one may borrow the tints of the rainbow, and the other, under the inspiration of his genius, may bid the marble to speak, with all the seeming graces and realities of life.

Ours, fellow-citizens, is a peculiar agriculture; it combines with the husbandry of more northern climes, the productions of the tropics, reared by the agency of slave labor. God for purposes best known to himself, has deposited in our hands this power over the labor and fate of another race. Let us be impressed with the sacred duty of ameliorating their condition, providing for their spiritual instruction and temporal comforts by all the means in our power, as the best refutation of the slanders of those, whose ignorance is but a poor apology for their malice.

I hope I shall not be considered as violating that canon of the constitution of our Society, (a just concession to the harmony of our social intercourse,) which prohibits the introduction of politics, either in the deliberation of our Society, or in our convivial intercourse. I cannot however, refrain from remarking, that we have the deepest and most abiding interest in Free Trade, and that we ought to watch with extreme vigilance, any tendency in our system of government to commercial restrictions, which are far more injurious to agriculture, than unfavorable seasons, or the blight of adverse harvests. With a staple of such vastly augmenting magnitude, we require not only the unfettered choice of the markets of the whole world, but that the exchangeable values which are sent to our country to purchase it, should come as little burthened with taxation as possible. There is no axiom so true, that restrictions on commerce constitute the paralysis of agriculture, and there is no sophism so absurd as that high duties on imports cheapen consumption.

Let me however, turn to a more agreeable theme—the Day.—The anniversary of our nativity as a Nation, which we have made the anniversary of our humble Association. It is certainly calculated in its impressive moral, to silence the spirit of party, and to check even a sorrowful retrospect of those painful causes of irritation, which have grown up between those whom it was the fond aspiration of patriotism to believe, under the blessing of God, had been joined together in peace and brotherly love, forever. Let us hope, that the spirit of that great American Captain, not only the first of American statesmen and patriots, but the first of American farmers, whose name belongs to the civilized world, and his virtues to the glory of the whole human race, may be impressed this day, on all and each, of the people of these United States. That the Union may exist as it came from his hands. That although his



earthly monument is yet unbuilt, it finds its best foundation in the enduring sanctity of his holy precepts of virtue and love of country!

I know no language fitted to the august theme of his canonized memory, but that which is almost superhuman. That which Milton breathes at the shrine of Shakespeare—at the shrine of a genius only second, if second to his own, who as little needed a monument made by human hands, as him of whom we speak but half the infinite and unutterable debt of gratitude we owe him, when we call him by an endearing epithet, "THE FATHER OF OUR COUNTRY."

"What needs *our Washington* for his honored bones,  
The labour of an age in piled stones?  
Or that his hallowed reliques should be hid  
Under a star-pointing pyramid?  
Dear son of memory, great heir of fame,  
What needest thou such weak witness of thy name?  
Thou in our wonder and astonishment  
Has built thyself a live long monument."

And so sepulchred, in such pomp dost lie,  
That kings, for such a tomb, would wish to die."

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For the Southern Agriculturist.

#### REPORT OF THE COMMITTEE ON COTTON AND PROVISION CROPS OF ST. PAUL'S AGRICULTURAL SOCIETY.

The Committee appointed by the St. Paul's Agricultural Society to inspect the cotton and provision crops, commenced the performance of said duty in August last.

The first day's ride was confined to the plantations of Messrs. Wm. Simmons, James Meggett, Abm. Wilson, J. Calder Whaley, John Toomer, W. Wilkinson, and M. W. Clement. The crops generally on these plantations, both provisions and cotton, with few exceptions, were in good order, and the cotton crops, on most of them, very promising. We would here make one remark on the corn planted in the *cotton* on the plantation of Mr. Wilkinson, where the cotton generally was very promising! but the injury was so evident from the corn being planted on the sides of the cotton beds, that we were of opinion, that the row on which the corn grew, which was every third one, would yield one third less than the adjoining rows. The corn, however, was very fine, if it had been planted in the alley it would not have been so good, but there would have been no injury done to the cotton. And an additional bag of cotton to the crop, at the price of 30 cts. per

pound, would have purchased more corn than was made altogether as cotton corn, at a price of 45 cents per bushel. Second day—we visited the plantations of Messrs. J. M. M'Leod, J. B. Grimball, Henry Seabrook, Col. Jno. S. Ashe, and James King. The cotton and provision crops on three of the above named places, were very good and in fine order, the other two were just the reverse, having been injured from bad work and improper draining; two very great causes for a lost crop. And where these two causes are permitted to exist, no planter has a right to expect a crop. In very strong or heavily manured land, the hoe or plough should be very cautiously used; but in old worn-out land not manured, there is no danger of forcing the plant too much. We however think, that no planter can put too much manure to his entire crop, when he plants from three to four acres to the hand; the highest rated crops were those that were best manured and best drained. Five workings on land heavily manured is quite sufficient. More would be injurious, except on nut or joint grass land.

The Committee would here beg leave to make a few observations on the subject of draining. It is contended by some, that double drains are the best, but we believe this to be an erroneous opinion, except when the land slopes on both sides. If the land is flat, half quarter draining is required, and by throwing all the earth one way, it will give a slope to each alley, leading the water from ditch to ditch. Whereas, in the double drains, there are always hollows in the alley between the drains, unless on every cleaning of them the earth is hauled back to meet in the centre of the alleys between the drains, which is three times the labor of half quarter draining. Where the earth is all thrown one way, half quarter draining can all be done with the plough, for we think that deep draining is not necessary, excepting in the main leads, and the brows of hills, where the land is more or less springy. The others should be surface drains, sunk but a few inches below the alley, which can be done with the Barshear plough after the land is banked, by throwing two furrows together in the task and half task paths, and then drawing the earth out with the hoe. This is an easy and effectual mode of draining. As we believe that all the members of this Society are convinced of the advantages of draining in flat or level lands, we consider it useless to make any

further comment on that subject. There may be some, however, who believe that high lands need no draining. If there are any of that opinion, we must be allowed to differ from them; and we will endeavor to prove that high land requires draining as well as low: take two adjoining fields, with soils equally adapted to the cotton plant, and plant them both the same year—if the season is a wet one, the low land will give the greatest yield, if thoroughly drained, and the high land not drained; but let the high land have quarter drains, so as to prevent the absorption of all the water that falls, the result will be in favor of the high land, either in a wet or dry season.

On the third day we visited the plantations of Messrs. W. Elliott, K. B. King, and H. S. King. The cotton crops on these plantations, we found in good condition. The corn crop on one of them, was not in as good order as we could have desired. We also noticed in one of the fields on this plantation, which had been cleared four or five years, many of the logs lying parallel with the rows, by which there was a considerable quantity of land lost. Whereas, if they had been turned across the beds, this would not have been the case.

In conclusion, we beg leave to make a few general observations, respecting the management of the cotton crop. First, before we can expect to make a crop, we must know that our lands have been well prepared, that there has been a sufficient quantity of manure applied for the plant to feed upon; we see very promising crops in July, and about the middle of August they gradually fall off, and the cause is attributed to the season, when the true cause is that the plant has exhausted the insufficient quantity of manure applied; and, consequently, it cannot supply the bolls with that food it requires to fill them; the result is that they dry up and fall off. When there is no manure applied, the plant will not put out more bolls than it can support; the growth will be slow, and in proportion to the natural strength of the land. To prove the correctness of what we have stated, take one peck of cotton-seed, and apply it to the task-row on very poor land under the list for corn and you will get a very fine stalk, but a very small ear, because the plant has exhausted the nutritious qualities of the seed, and nourishment fails when most needed. The stalk has already exhausted that of which there ought to have been sufficient to fill the ear. If



the peck of seed is applied when the stalk is swelling for the tassel, you will get a large ear, and a small stalk. If you apply one peck under the list, and when the stalk is swelling for the tassel apply another, the result will be that you get both, with the blades green to the bottom until it begins to mature, because there has been sufficient food for the plant. Now does not this hold good with cotton also, that if there is not a sufficient quantity of manure in the bed to supply the plant, it becomes diseased toward the latter part, and the cause is laid to the season. As to the cultivation of a cotton crop there can be no fixed rule, the planter must be governed altogether by the season and the nature of his land, for what will suit one soil, will not suit another.

Again—we have heard some very experienced planters contend that one well rotted cart-load of manure is equal to three loads not rotted, but as far as our experience goes, we would prefer the manure when applied to the land half rotted, so that decomposition may be going on while the plant is bearing. As it regards the application of compost manure, we think it ought to be thoroughly incorporated with the list, by chopping it in after it is spread.

All of which is respectfully submitted.

H. S. KING,	} Committee.
M. W. CLEMENT,	
K. B. KING,	
W. E. SIMMONS,	

July 1st, 1844.

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From the (Columbia) South-Carolinian.

OVERSEERS.— No. II.

We often hear planters boasting of having made six, eight, and sometimes ten bags of cotton to the hand, and when one speaks of making a "fine crop," it is understood that he has turned out five or six bags or more per hand. Occasionally an old planter will take the liberty of inquiring of one of these fine croppers how much corn he has made, but seldom venture further. Now it is this very erroneous idea, that a large number of cotton bags constitute of itself a "fine crop," that is so fatal to all improvement in planting, and so ruinous to overseers. What does it avail a planter to make ten bags of cotton to the hand, if he has to buy corn and meat—if his mules break down—his negroes decrease, and his lands go to nothing?

My idea of a "fine crop" is, first, an increase of negroes; second, enough made on the plantation, of meat, corn, &c. to feed every

thing abundantly ; third, an improvement, rather than a deterioration, in the productive quality of the lands ; fourth, the mules, horses, farming utensils and fences all in first rate order by Christmas ; and then, as much cotton as can be made and gathered, under these circumstances. And I will venture to assert, that no planter will thrive, in the long run, who does not make "fine crops" of this sort. Nor will agriculture steadily improve, until all planters are of this opinion, and act upon it : and not only planters, but overseers. In the vocabulary of overseers, "a fine crop" refers wholly to a fine cotton crop. They boast of nothing else at the muster-ground, and road-working, where they carry, with perhaps a commendable vanity, the first form, first bloom, and first grown boll. When they seek a place, they rest their claims entirely on the number of bags they have heretofore made to the hand, and generally the employer unfortunately recognizes the justice of such claims.

No wonder then, that the overseer desires to have entire control of the plantation. No wonder he opposes all experiments, or, if they are persisted in, neglects them ; presses everything at the end of the lash ; pays no attention to the sick, except to keep them in the field as long as possible, and drives them out again at the first moment, and forces sucklers and breeders to the utmost. He has no other interest than to make a big cotton crop. And if this does not please you and induce you to increase his wages, he knows men it will please, and secure him a situation with.

Until planters, therefore, generally come to the opinion, that it is necessary to attend to other things besides making cotton, to get rich by agriculture, it will be impossible to reform overseers, or increase either the individual or aggregate wealth of the country. And that this conclusion is a just one, I appeal to the experience of all planters. During the recent hard times, has any single planter been brought to the block, unless for security debts, who made all, or nearly all his articles of consumption within himself, though he made ever so small crops of cotton ? On the other hand, how many of the ten-bag planters have been swept away ? In fact, does it not somehow happen, that almost all such planters are, sooner or later, in a very ticklish condition ? And generally, they leave to children reared on the ten-bag scale, worn-out lands, and broken down negroes. Cotton is *the* great crop, but not the only crop. Energy is a great thing in planting, and doubtless the fundamental principle of success, but something else is also requisite—judgment, care and foresight.

But I am writing about overseers. I wish to see them reformed. Planters must, I fear, first reform themselves. But if they could only be induced, when overseers apply to them for places, to ask the following questions, in the following order, and engage or not engage according to their answers. I believe it would, if the plan was universally adopted and kept up for five years, do more to

improve our agriculture than five hundred cattle shows, as serviceable as I think them to be.

1. Will you obey orders, implicitly, promptly, and fully ?
2. How many negroes were under your charge last year ?
3. How many births had you ?
4. How many deaths ?
5. How many hogs did you raise ?
6. How much corn did you make ?
7. How much manure ?
8. What experiments did you try ?
9. How many of your mules died ?
10. Did you leave every thing in good repair ?
11. What was your crop of cotton ?
12. What is your price ?

FRANKLIN.

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#### PLOUGHING ORCHARDS.

If well done, and the trees not run over nor lacerated, is found to be a difficult work. To make it easy, get a short one-horse whipple-tree about 15 inches long, and attach one of the horses by long traces to the plough ; fasten the other horse before it, and let them go *tandem*. A careful boy or man rides the forward horse, and another holds the plough. After the intermediate space between the rows has been ploughed in the usual manner by horses abreast, as near to the trees as convenience and care will admit, finish the rest with the tandem team, rigged as just stated. The long traces will allow the plough to run as near the tree as is needed, and the short whipple-tree can scarcely be made to touch a tree. Well tested by experience.

J. J. T.

[*Albany Cultivator*.]

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#### AN APPLE WITHOUT SEED OR CORE.

S. W. Jewett, Esq., in a letter to the Boston Cultivator, says he has this year received some "slips" (scions we suppose,) of a kind of apple that has neither "*core nor seeds*." The fruit he says, is only propagated near Ticonderoga, N. Y. The origin of the variety is given in the following words :—"The top of a young tree was bent over and covered with earth which took root ; the tree was cut asunder, which stopped all connexion with the natural roots of the tree, and by sprouts which sprung from the top portion of the body a regular top was formed, which produces this fine fruit, said to be a beautiful red, good size, very pleasant table apple to be used in the fall."



## VALUABLE WHEAT.

We have been shown a sample of red wheat, which it is said to possess so many excellent qualities that we do not hesitate to direct the attention of farmers to it. It was raised by Dr. Joseph E. Muse, of Dorchester county Md.—a gentleman whose scientific researches have been of great service to the cause of agriculture. The wheat above alluded to is called *German Wheat*. It possesses the important quality of ripening eight or ten days earlier than even the Mediterranean Wheat, is not all affected by rust, fly or smut, weighs  $64\frac{1}{2}$  pounds to the bushel, and is pronounced to be, in good soils, extremely prolific. The present parcel was harvested on the 12th June. The qualities here ascribed to it were satisfactorily tested by Dr. Muse, who watched the experiment with great interest. Those who desire to sow some of this wheat—and every intelligent farmer should at least make the experiment—can procure it from the agents, Messrs. James Barroll & Son, Pratt-street.

[*Baltimore American.*]

## INTERESTING SCIENTIFIC EXPERIMENTS.

*Messrs. Editors:*—I have noticed lately from experiments which have been made in France, that seem to be important; at all events, they are interesting and I think useful. The nutritive quality of flour has been ascertained by a French chemist, from a variety of samples which he has analyzed, and the following is the result:

Nuremburgh bread is equival't to	100.00
Dresden       "       "       "	115.31
Berlin         "       "       "	116.04
Canada flour   "       "       "	117.23
Essex          "       "       "	121.33
Glasgow unfermented bread   "	123.15
Sothian flour   "       "       "	134.06
United States flour       "       "	145.03
U. S. Flour by chemical analysis,	150.00

By this it will be seen that U. States flour is far the most nourishing of any in the world. It would be well if the starving poor of Ireland and England, could oftener be permitted to try its nutritious qualities—joy would gladden many a habitation where want and misery now dwells.

Some very singular experiments have also been made as to the fattening tendency of sugar. In many constitutions it is ascertained to have this tendency. It is said that the negroes in the West-Indies while engaged in making sugar, becomes extremely fat, they living almost exclusively on the sirup during the season of manufacture. How far this would answer as an exclusive diet is not stated. It is presumed, however, that there are few individuals who could endure it for any length of time.

A FARMER.

May, 1844:

[*Central New-York Farmer.*]

## FATTENING TURKEYS.

On looking over some old papers a few days ago, we came across the following curious mode of fattening turkeys :

"In the winter of 1818-19, a gentleman in this city made the following experiment : He placed a turkey in an enclosure about four feet long, two feet wide, and three or four feet high. He excluded as much light as he could without preventing a circulation of air, and fed the turkey with soft bricks broken into pieces, with charcoal also broken, and with six grains of corn per day. Fresh water was daily supplied. The box or coop in which the turkey was placed he always locked up with his own hands, and is perfectly confident that nobody interfered with the experiment.

"At the end of one month he invited a number of his neighbors, among others, two physicians. The turkey, now very large and heavy, was killed and opened by the physicians, and was found to be filled up with fat. The gizzard and entrails were dissected, and nothing was found but a residuum of charcoal and bricks. To conclude the examination satisfactorily, the turkey was eaten, and found to be very good. Last winter he again repeated the experiment with the same success.

"The circumstance which induced him to make the experiment is a very curious one. One of his neighbors informed him, that being driven from the city by the fever of 1793, his family recollected that some fowls that had lived in a kind of loft over his workshop, had been forgotten in the hurry of their removal, and would certainly be starved. They were absent six or eight weeks, and on the retiring of the pestilence returned. To their great astonishment, the fowls were not only alive, but very fat, although there was *nothing but charcoal and shavings* that they could have eaten, and some water that had been left in the trough of a grindstone had supplied them with drink."

It appears from the above that turkeys are a species of biped that thrive best on a Graham diet.

[*Boston Mercantile Journal.*]

## ST. LUKES' AGRICULTURAL SOCIETY.

BLUFFTON, JULY 18th, 1844.

To the Editor of *Southern Agriculturist*,

SIR,—At a recent anniversary meeting of the St. Luke's Agricultural Society, the following gentlemen were elected Officers for the ensuing year.

Dr. JEREMIAH FICKLING, *President.*

THOMAS F. DRAYTON, *Vice-President.*

GEORGE ALLEN, *Secretary & Treasurer.*

GEORGE P. ELLIOTT, *Corresponding Secretary.*

You will please insert the above in your *Journal*.

Yours, very respectfully,

GEORGE P. ELLIOTT, *Cor. Secretary.*